

CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE UPPER FRENCH BROAD RIVER WATERSHED

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5.1. BACKGROUND. The Watershed Approach relies on participation at the federal, state, local and nongovernmental levels to be successful. Two types of partnerships are critical to ensure success:

- Partnerships between agencies
- Partnerships between agencies and landowners

This chapter describes both types of partnerships in the Upper French Broad River Watershed. The information presented is provided by the agencies and organizations described.

5.2. FEDERAL PARTNERSHIPS.

5.2.A. Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, provides technical assistance, information, and advice to citizens in their efforts to conserve soil, water, plant, animal, and air resources on private lands.

Performance Results System (PRS) is a Web-based database application providing USDA Natural Resources Conservation Service, conservation partners, and the public fast and easy access to accomplishments and progress toward strategies and performance. The PRS may be viewed at <http://prms.nrcs.usda.gov/prs>. From the opening menu, select “Reports” in the top tool bar. You will select the time period that you are interested in and the conservation treatment of interest on the page the comes up. Depending on the time period of interest, you will have various report options to choose from, such as location, reporting period and program involved in the reporting. You may be required to “refresh” the page in order to get the current report to come up.

The data can be used to determine broad distribution trends in service provided to customers by NRCS conservation partnerships. These data do not show sufficient detail to enable evaluation of site-specific conditions (e.g., privately-owned farms and ranches) and are intended to reflect general trends.

Conservation Practice	Feet	Acres	Number
Conservation Buffers	12,576	5	
Erosion Control		133	
Nutrient Management		1,507	
Pest Management		1,682	
Grazing / Forages	805	7	
Tree and Shrub Practices		353	
Tillage and Cropping		781	
Wetlands		3	
Wildlife Habitat Management		1,402	
Water Supply	7,190		26

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in the Upper French Broad River Watershed. Data are from PRMS for October 1, 2002 through September 30, 2006 reporting period. More information is provided in Appendix V.

5.2.B. United States Geological Survey – Tennessee Water Science Center Programs. The United States Geological Survey (USGS) provides relevant and objective scientific information and data for public use in evaluation of the quantity, quality, and use of the Nation’s water resources. National USGS water resource assessments include the National Streamflow Information Program (<http://water.usgs.gov/nsip/>), National Atmospheric Deposition Network (<http://bqs.usgs.gov/acidrain/>), the National Stream Quality Accounting Network (<http://water.usgs.gov/nasqan/>), and the National Water

Quality Assessment Program (<http://water.usgs.gov/nawqa>). For a national overview of USGS water resources programs, please visit <http://water.usgs.gov>.

In addition to national assessments, the USGS also conducts hydrologic investigations and data collection in cooperation with numerous federal, state, and local agencies to address issues of national, regional, and local concern. Hydrologic investigations conducted by the USGS Tennessee Water Science Center address scientific questions pertaining to five general thematic topics:

1. Water Use and Availability,
2. Landforms and Ecology,
3. Watersheds and Land Use,
4. Occurrence, Fate, and Transport of Contaminants,
5. Floods and Droughts.

In support of these investigations, the USGS Tennessee Water Science Center records streamflow continuously at more than 100 gaging stations, makes instantaneous measurements of streamflow at numerous other locations as needed or requested, monitors ground-water levels statewide, and analyzes the physical, chemical, and biologic characteristics of surface and ground waters. In addition, the Water Science Center compiles annual water-use records for the State of Tennessee and collects a variety of data in support of national USGS baseline and other networks. More information pertaining to USGS activities in Tennessee can be accessed at <http://tn.water.usgs.gov>.

USGS Water Resources Information on the Internet. Real-time and historical streamflow, water-level, and water-quality data at sites operated by the USGS Tennessee Water Science Center can be accessed on-line at <http://waterdata.usgs.gov/tn/nwis/nwis>. Data can be retrieved by county, hydrologic unit code, or major river basin using drop-down menus on the web page. For specific information or questions about USGS streamflow data, contact Donna Flohr at (615)837-4730 or dfflohr@usgs.gov. Recent USGS Tennessee Water Science Center publications can be accessed by visiting <http://tn.water.usgs.gov/pubpg.html>. A searchable bibliographic database is also provided for locating other USGS reports and products addressing specific scientific topics.

5.2.C. U.S. Fish and Wildlife Service. The mission of the U.S. Fish and Wildlife Service is working with partners to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Sustaining our nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens. The U.S. Fish and Wildlife Service (Service) works with state and federal agencies and tribal governments, helps corporate and private landowners conserve habitat, and cooperates with other nations to halt illegal wildlife trade. The Service also administers a Federal Aid Program that distributes funds annually to states for fish and wildlife restoration, boating access, hunter education, and related projects across America. The funds come from federal excise taxes on fishing, hunting, and boating equipment.

Endangered Species Program

Through the Endangered Species Program, the Service consults with other federal agencies concerning their program activities and their effects on endangered and threatened species. Other Service activities under the Endangered Species Program include the listing of rare species under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.) and the recovery of listed species. Once listed, a species is afforded the full range of protections available under the ESA, including prohibitions on killing, harming, or otherwise taking a species. In some instances, species listing can be avoided by the development of Candidate Conservation Agreements, which may remove threats facing the candidate species, and funding efforts such as the Private Stewardship Grant Program.

Recovery is the process by which the decline of an endangered or threatened species is stopped and reversed, and threats to the species' survival are eliminated, so that long-term survival in nature can be ensured. The goal of the recovery process is to restore listed species to a point where they are secure and self-sustaining in the wild and can be removed from the endangered species list. Under the ESA, the Service and National Marine Fisheries Service were delegated the responsibility of carrying out the recovery program for all listed species.

In an effort to preclude the listing of a rare species, the Service engages in proactive conservation efforts for unlisted species. The program covers not only formal candidates but other rare species that are under threat. Early intervention preserves management options and minimizes the cost of recovery.

In a partnership with The Nature Conservancy (TNC), Tennessee Wildlife Resources Agency (TWRA), and Tennessee Department of Environment and Conservation (TDEC) Division of Natural Areas, the Service developed a State Conservation Agreement for Cave Dependent Species in Tennessee (SCA). The SCA targets unlisted but rare species and protects these species through a suite of proactive conservation agreements. The goal is to preclude the need to list these species under the ESA. This agreement covers middle and eastern Tennessee and will benefit water quality in many watersheds within the State.

The federally endangered gray bat (*Myotis grisescens*) occurs in this reach of the French Broad River. For a complete listing of endangered and threatened species in the Upper French Broad River Watershed, please visit the Service's website at:

<http://www.fws.gov/cookeville/>

Partners for Fish and Wildlife Program

The U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to restore historic habitat types which benefit native fishes and wildlife. The program adheres to the concept that restoring or enhancing habitats such as wetlands or other unique habitat types will substantially benefit federal trust species on private lands by providing food and cover or other essential needs. Federal trust species include threatened and endangered species, as well as migratory birds (e.g. waterfowl, wading

birds, shorebirds, neotropical migratory songbirds).

Participation is voluntary and various types of projects are available. Projects include livestock exclusion fencing, alternate water supply construction, streambank stabilization, restoration of native vegetation, wetland restoration/enhancement, riparian zone reforestation, and restoration of in-stream aquatic habitats.

HOW TO PARTICIPATE...

- Interested landowners contact a Partners for Fish and Wildlife Biologist to discuss the proposed project and establish a site visit.
- A visit to the site is then used to determine which activities the landowner desires and how those activities will enhance habitat for trust resources. Technical advice on proposed activities is provided by the Service, as appropriate.
- Proposed cost estimates are discussed by the Service and landowner.
- A detailed proposal which describes the proposed activities is developed by the Service biologist and the landowner. Funds are competitive, therefore the proposal is submitted to the Service's Ecosystem team for ranking and then to the Regional Office for funding.
- After funding is approved, the landowner and the Service co-sign a Wildlife Extension Agreement (minimum 10-year duration).
- Project installation begins.
- When the project is completed, the Service reimburses the landowner after receipts and other documentation are submitted according to the Wildlife Extension Agreement.

For more information regarding the Endangered Species and Partners for Fish and Wildlife programs, please contact the Cookeville Ecological Services Field Office at 931/528-6481 or visit their website at <http://www.fws.gov/cookeville/>

5.2.D. Tennessee Valley Authority (TVA). Tennessee Valley Authority's (TVA) goals for the 21st century are to generate prosperity for the Tennessee Valley by promoting economic development, supplying low-cost, reliable power, and supporting a thriving river system. TVA is committed to the sustainable development of the region and is engaged in a wide range of watershed protection activities to improve or protect water quality conditions.

TVA's watershed activities are conducted by 7 multidisciplinary Watershed Teams located throughout the Valley. These Watershed Teams help communities develop and implement protection and restoration activities in their local watersheds. In addition to water quality efforts, Watershed Teams carry out varied resource stewardship functions

including management of TVA lands and shorelines, recreation, and resource management. These teams work in partnership with business, industry, government agencies, and community groups to manage, protect, and improve the quality of the Tennessee River and its tributaries. TVA also operates a comprehensive monitoring program to provide real-time information to the Watershed Teams and other entities about the conditions of these resources. TVA is also involved in outreach efforts in many watersheds in Tennessee, including the Upper French Broad River Watershed:

Transylvania County, NC- Tennessee Growth Readiness Workshop Series

The Tennessee Growth Readiness Initiative (TGRi) is an educational program that focuses on teaching local officials, and other decision makers about the sources and impacts of nonpoint source pollution, how different land uses affect water quality, and what communities can do to protect water quality.

Kids In the Creek

This annual event is done in conjunction with NC State Extension and the Mud Creek Restoration Council, for Henderson County Middle School students. The Kids in the Creek program provides students with a glimpse of how Aquatic Biologists monitor the health of a stream. The students spend time at four stations: aquatic insects, fish community, water quality, and watershed education. Each station focuses on the importance of a healthy stream both for the ecosystem and human health.

Details about Outreach Activities can be obtained by writing the Holston-Cherokee-Douglas Watershed Team, 3726 E. Morristown Blvd., Morristown, TN, 37813 or calling Ms. Dana Ball at 423-585-2128, or E-mail her at dmball@tva.gov.

5.2.E. United States Army Corps of Engineers-Nashville District. The Nashville District, U.S. Army Corps of Engineers is one of seven districts in the Lakes and Rivers Division. The district's area is determined by the Cumberland River and the Tennessee River's watersheds and encompasses 59,000 square miles in portions of seven states. This geographic area is represented by 14 senators and 20 Congressional representatives. The Nashville District's missions include providing flood protection, recreation, hydropower, and navigation. The District also provides environmental stewardship through our Regulatory and Civil Works programs, conducts emergency response to disasters, and to performs other authorized Civil Works projects.

Within the 18,000 square mile Cumberland River Basin, overall responsibilities for the Nashville District include operation and maintenance of 10 reservoir projects. Each of these is operated for some or all of the following purposes: hydropower production, flood control, navigation, water supply, water quality, fish and wildlife, and recreation.

Within the much larger, 41,000 square mile Tennessee River Basin the Nashville District operates a series of navigation locks and has regulatory permit authority over dredge and fill activities under the Clean Water Act and the Rivers and Harbors Act.

As of 2005, the District's flood control projects have prevented more than \$1.96 billion in flood damages. The District also provides flood prevention planning assistance to the states and local governments.

Lakes in the Nashville District are the most popular in the nation. More than 36 million people visited our 10 lakes last year. These recreation users had an economic impact on the region of nearly \$877 million dollars. Five Nashville District lakes rank among the top 25 in Corps-wide visitation. In 2000, the District's 70 commercial concessionaires produced \$1.3 million in profit, and returned more than \$300,000 to the U.S. Treasury in rent payments for leases.

The Nashville District has the capacity to produce more than 914 megawatts of clean electricity, enough to power the needs of a city the size of Nashville, at nine different hydropower generations plants in the Cumberland River Basin. The District generates about \$44 million in revenue from the sale of this power annually. This revenue is returned to the U.S. Treasury.

The Nashville District operates and maintains 1,175 commercially navigable river miles; almost 10% of the total within the U.S. Army Corps of Engineers. The district operates and maintains 14 navigation lock projects; nine on the Tennessee River, four on the Cumberland River, and one on the Clinch River. There are more than 40,000 commercial and recreational lockages annually. More than 74 million tons of commodities passed through these 14 locks during 2005. Wilson Lock in Alabama has the highest single lift east of the Rocky Mountains, between 93 and 100 feet, depending on the current river water level.

Regulatory Program

The U.S. Army Corps of Engineers has been involved in regulating certain activities in the nation's water since 1890. Prior to 1968, the primary thrust for the regulatory program was the protection of navigation. As a result of new laws and judicial decisions, the program has evolved to one that considers the full public interest by balancing the favorable impacts against detrimental impacts. The Nashville District annually handles more than 3,000 regulatory actions, 97% of which were evaluated in less than 60 days.

Section 10 of the Rivers and Harbors Act of 1899 - requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, and cable/pipeline crossings.
- Dredging and excavation

Section 404 of the Clean Water Act - requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands.
- Site development fill for residential, commercial, or recreational developments.
- Construction of revetments, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.

Civil Works Program

The Corps' ongoing Civil Works responsibilities date back to the early 1800's when Congress authorized the removal of navigation hazards and obstacles. Over the years, succeeding Administrations and Congresses have expanded the Corps' missions to include most all water-related planning, development, and construction areas where a Federal interest is involved. Funds for Congressionally Authorized Projects are provided through Energy and Water Appropriations Acts and through contributions from non-Federal entities for specific projects.

Civil Works projects may also be funded under the Continuing Authorities Program (CAP). Congress has provided the Corps with standing authorities to study and build specific water resources projects for specific purposes and with specified spending limits. CAP projects are usually implemented in a faster time frame, are limited in complexity, have Federal cost limits, are approved by the Division Commander, and do not need Congressional authorization.

Nashville District Corps of Engineers Water Quality Program

The Nashville District Corps of Engineers collects a significant volume of physical, chemical, and biological water quality data every year. These data are collected at representative points both within all ten Nashville District lakes, on various major and/or representative inflow streams, and in the tailwaters. Where there are known water quality problems, such as seasonal low DO in certain turbine releases, monitoring is significantly intensified to track and quantify a particular problem. This information is used to make informed decisions about how a project's powerplant should operate.

The data collected by the Nashville District are used to help determine watershed water quality trends and to provide for better management of the comprehensive reservoir system. The data are essential for running predictive water quality models, a growing trend in Corps' water management practice.

Additional information concerning projects, programs, and activities of the Nashville District Corps of Engineers can be obtained on the World Wide Web at

<http://www.lrn.usace.army.mil/>

Environmental Education

Environmental education opportunities are provided to area school age children by the Nashville District Corps of Engineers. Water Quality personnel have participated in environmental awareness programs for the past several years at the majority of Nashville District lakes. These programs are organized by the local lake Resource Management staff and involve various area schools. The programs provided allow students to have a "hands on" experience in water quality surveillance techniques. Typically the programs include an interactive discussion of overall water quality issues.

This is supplemented with demonstrations of sophisticated water quality instrumentation, collection and analysis of biological specimens from local aquatic environments, and viewing of reference materials and preserved specimens. The value of such environmental education is enormous, because it reaches young people early in their lives and exposes them to a scientific learning experience that is impossible to duplicate in a formal classroom. This experience hopefully contributes to a greater lifelong awareness by the individual of the importance of conserving and improving water quality and wise use of water resources.

Additional Information

To obtain additional information about the District, please refer to the home page at:

<http://www.lrn.usace.army.mil/>, or contact the following offices:

Public Affairs Office (General Information): (615) 736-7161

Regulatory Branch: (615) 369-7500

5.2.E. USDA – Forest Service. The USDA Forest Service manages approximately 645,000-acres in Tennessee (Cherokee National Forest (CNF)). This ownership includes about 59,000 acres within the Upper French Broad River watershed in Tennessee. The general mission of the Forest Service is to achieve an ecological and sustainable, multiple use approach to land management that meets the diverse needs of people. In order to achieve this mission, a watershed-based approach to ecosystem management has been adopted.

A variety of management activities occur within the Upper French Broad River watershed on national forest lands. Some of these include:

Ecosystem Management and Restoration. Prescribed burning and vegetation treatments are used to meet a variety of ecosystem-based management objectives. Periodically, prescribed fire is used to reduce hazardous fuel loads and improve wildlife habitat conditions within the watershed on CNF lands. Thinning and regeneration cuts are also used on selected areas where timber harvest is necessary to achieve restoration or wildlife habitat objectives. The southern pine beetle has impacted pine forest types within this watershed in the recent past. The Hemlock Woolly Adelgid is currently infesting hemlock trees in this watershed and other areas in Tennessee. Efforts are currently underway to provide for the conservation of the hemlock through a variety of means to suppress the Hemlock Woolly Adelgid on a local basis.

Recreation Management. A variety of recreation uses occur on National Forest lands within this watershed. Hiking, whitewater boating, fishing, camping, horse use, scenic viewing and hunting are some of the many uses. Developed and dispersed recreation opportunities are provided. The French Broad River and Paint Creek corridors are key areas for recreation activity. The Appalachian Trail is located on national forest and other lands within this watershed.

Inventory and Monitoring. There are 55 perennial streams capable of supporting fish and approximately double that number of perennial and intermittent streams that support

other aquatic organisms in the Upper French Broad River Watershed on National Forest system lands. Three-pass electro-fishing and instream habitat surveys are conducted on some of these streams. Since 1997, thirty-six surveys have been conducted in the Upper French Broad River Watershed. A total of 22 species of fish have been documented in these streams. No federally listed species are documented on National Forest lands in this watershed.

The instream habitat surveys document physical characteristics in the stream. Degraded conditions are identified and corrected as needed. The most frequently documented degradation is a lack of large wood in the stream channel. Log structures have been installed to alleviate a portion of this problem.

Other Management Activities. A variety of additional management activities occur within the French Broad River watershed on national forest lands. These include:

- Collaborative planning with a variety of other Federal, State and local agencies and private individuals to identify and prioritize watershed improvement needs on public and private lands
- Watershed improvements including road and trail decommissioning to reduce soil loss and sediment yield
- Environmental education programs with school, scouting and other groups

Further information about the Cherokee National Forest can be found on its homepage at <http://www.fs.fed.us/r8/cherokee/>.

5.2.F. National Park Service. Great Smoky Mountains National Park (GSMNP) is rich with nearly 3,400 kilometers (2,100 miles) of cool and cold-water stream habitats. Of this total, 1,280 km (800 miles) support a diverse fish community. Large stream systems (4th-5th order) support the greatest diversity of fishes in GSMNP, including 12 families and over 60 species. Many of the fish species found in these large stream systems are excellent indicators of natural and anthropogenic environmental impacts. Large stream systems in GSMNP are sampled each fall in an attempt to provide a snapshot of the diversity of habitat and fish species found in the Park's larger stream systems. Backpack electrofishing gear and three-pass depletion estimates are used to evaluate year-class strength, reproductive success, density (# fish/100m²), biomass (kg/ha), and other trend information.

For more information on biological monitoring, contact the Great Smoky Mountains National Park at grsm_smokies_information@nps.gov.

5.3. STATE PARTNERSHIPS.

5.3.A. TDEC Division of Water Supply. The Source Water Protection Program, authorized by the 1996 Amendments to the Safe Drinking Water Act, outline a comprehensive plan to achieve maximum public health protection. According to the plan, it is essential that every community take these six steps:

- 1) Delineate the drinking water source protection area
- 2) Inventory known and potential sources of contamination within these areas
- 3) Determine the susceptibility of the water supply system to these contaminants
- 4) Notify and involve the public about threats identified in the contaminant source inventory and what they mean to their public water system
- 5) Implement management measures to prevent, reduce or eliminate threats
- 6) Develop contingency planning strategies to deal with water supply contamination or service interruption emergencies (including natural disaster or terrorist activities).

Source water protection has a simple objective: to prevent the pollution of the lakes, rivers, streams, and ground water (wells and springs) that serve as sources of drinking water before they become contaminated. This objective requires locating and addressing potential sources of contamination to these water supplies. There is a growing recognition that effective drinking water system management includes addressing the quality and protection of the water sources.

Source Water Protection has a significant link with the Watershed Management Program goals, objectives and management strategies. Watershed Management looks at the health of the watershed as a whole in areas of discharge permitting, monitoring and protection. That same protection is important to protecting drinking water as well. Communication and coordination with a multitude of agencies is the most critical factor in the success of both Watershed Management and Source Water Protection.

Watershed management plays a role in the protection of both ground water and surface water systems. Watershed Management is particularly important in areas with karst (limestone characterized by solution features such as caves and sinkholes as well as disappearing streams and springs), since the differentiation between ground water and surface water is sometimes nearly impossible. What is surface water can become ground water in the distance of a few feet and vice versa.

Source water protection is not a new concept, but an expansion of existing wellhead protection measures for public water systems relying on ground water to now include surface water. This approach became a national priority, backed by federal funding, when the Safe Drinking Water Act amendments (SDWA) of 1996 were enacted. Under this Act, every public drinking water system in the country is scheduled to receive an assessment of both the sources of potential contamination to its water source of the threat these sources may pose by the year 2003 (extensions were available until 2004). The assessments are intended to enhance the protection of drinking water supplies within existing programs at the federal, state and local levels. Source water

assessments were mandated and funded by Congress. Source water protection will be left up to the individual states and local governments without additional authority from Congress for that progression.

Tennessee's Wellhead Protection Rules were revised as of October 29, 2005 to include requirements for similar protection for public water systems using surface water sources under the heading of Drinking Water Source Protection Rule (1200-5-1-.34) in addition to the previous requirements for wellhead protection for public water systems using ground water sources. The rule addresses surface or ground water withdrawals in the vicinity of public water sources as well as potential contaminant sources threatening public water sources to reflect the amended prohibitions in the 2002 Amendments to the Tennessee Safe Drinking Water Act, TCA 68-221-771. There are additional reporting requirements of potential contaminant source inventories and emergency response for the public water systems as well. The Division of Water Supply will be able to use the Drinking Water Source Protection Rule to work in complimentary fashion with the Division of Water Pollution Control and other Departmental agencies in activities to protect public water sources.

As a part of the Source Water Assessment Program, public water systems are evaluated for their susceptibility to contamination. These individual source water assessments with susceptibility analyses are available to the public at:

<http://www.state.tn.us/environment/dws> as well as other information regarding the Source Water Assessment Program and public water systems.

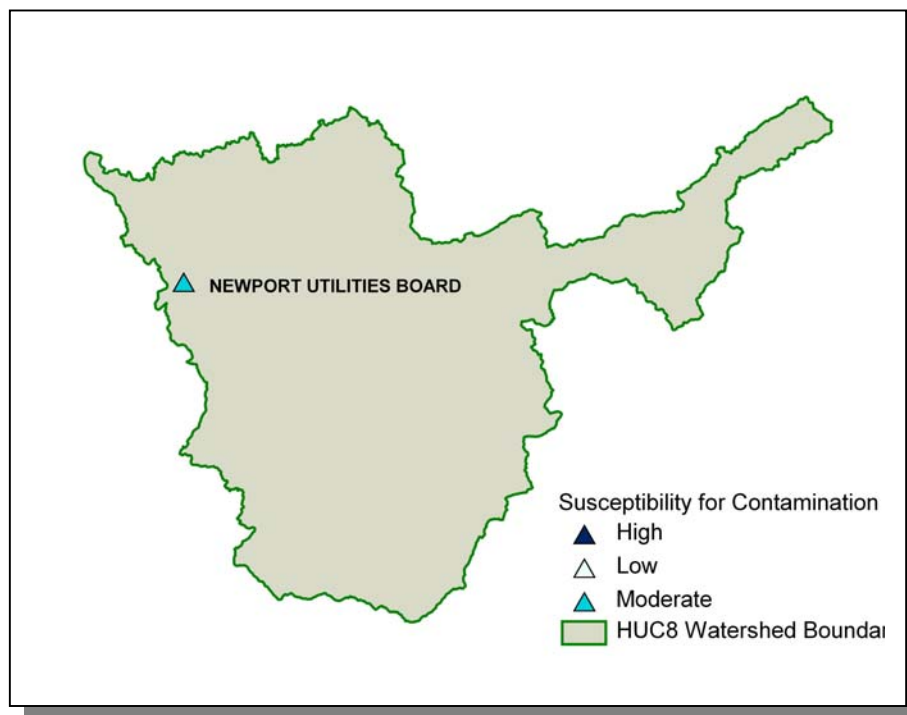


Figure 5-1. Public Water Systems Susceptible to Contamination in the Upper French Broad River Watershed.

For further discussion on ground water issues in Tennessee, the reader is referred to the Ground Water Section of the 305(b) Water Quality Report at:

<http://state.tn.us/environment/dws/pdf/2006gw305b.pdf>

5.3.B. TDEC Clean Water State Revolving Fund Program. The Division of Water Pollution Control and the Division of Water Supply jointly administer the state's Clean Water State Revolving Fund Program. Amendment of the Federal Clean Water Act in 1987 created the Clean Water State Revolving Fund (SRF) Program to provide low-interest loans to cities, counties, and utility districts for the planning, design, and construction of wastewater facilities. The U.S. Environmental Protection Agency awards annual capitalization grants to fund the program and the State of Tennessee provides a twenty-percent funding match. TDEC has awarded loans totaling over \$675 million since the creation of the SRF Program. SRF loan repayments are returned to the program and used to fund future SRF loans.

SRF loans are available for planning, design, and construction of wastewater facilities, or any combination thereof. Eligible projects include new construction or upgrading/expansion of existing facilities, including wastewater treatment plants, pump stations, force mains, collector sewers, interceptors, elimination of combined sewer overflows, and nonpoint source pollution remedies.

SRF loan applicants must pledge security for loan repayment, agree to adjust user rates as needed to cover debt service and fund depreciation, and maintain financial records that follow governmental accounting standards. SRF loan interest rates range from zero percent to market rate, depending on the community's per-capita income, taxable sales, and taxable property values. Most SRF loan recipients qualify for interest rates between 2 and 4 percent. Interest rates are fixed for the life of the term of the loan. The maximum loan term is 20 years or the design life of the proposed wastewater facility - whichever is shorter.

The SRF Program maintains a Priority Ranking System and Priority List for funding the planning, design, and construction of wastewater facilities. The Priority Ranking List forms the basis for funding eligibility determinations and allocation of Clean Water SRF loans. Each project's priority rank is generated from specific priority ranking criteria and the proposed project is then placed on the Project Priority List. Only projects identified on the Project Priority List may be eligible for SRF loans. The process of being placed on the Project Priority List must be initiated by a written request from the potential SRF loan recipient or their engineering consultant. SRF loans are awarded to the highest priority projects that have met SRF technical, financial, and administrative requirements and are ready to proceed.

Since SRF loans include federal funds, each project requires development of a Facilities Plan, an environmental review, opportunities for minority and women business participation, a State-approved sewer use ordinance and Plan of Operation, and interim construction inspections.

For further information about Tennessee's Clean Water SRF Loan Program, contact the Clean Water SRF Loan Program by telephone at (615) 532-0445 or visit their Web site at <http://tennessee.gov/environment/srf>.

5.3.C. Tennessee Department of Agriculture. The Tennessee Department of Agriculture's Water Resources Section administers the federal Section 319 Nonpoint Source Program and the Agricultural Resources Conservation Fund Program. Both of these are grant programs which award funds to various agencies, non-profit organizations, and universities that undertake projects to improve the quality of Tennessee's waters and/or educate citizens about the many problems and solutions to water pollution. Both programs fund projects associated with what is commonly known as "nonpoint source pollution."

The Tennessee Department of Agriculture's Nonpoint Source Program (TDA-NPS) has the responsibility for management of the federal Nonpoint Source Program, funded by the US Environmental Protection Agency through the authority of Section 319 of the Clean Water Act. This program was created in 1987 as part of the reauthorization of the Clean Water Act, and it established funding for states, territories and Indian tribes to address NPS pollution. Nonpoint source funding is used for installing Best Management Practices (BMPs) to stop known sources of NPS pollution, training, education, demonstrations, and water quality monitoring. The TDA-NPS Program is a non-regulatory program, promoting voluntary, incentive-based solutions to NPS problems. The TDA-NPS Program funds three types of programs:

- **BMP Implementation Projects.** These projects aid in the improvement of an impaired waterbody, or prevent a non-impaired water from becoming listed on the 303(d) List.
- **Monitoring Projects.** Up to 20% of the available grant funds are used to assist the water quality monitoring efforts in Tennessee streams, both in the state's 5-year watershed monitoring program, and also in performing before-and-after BMP installation, so that water quality improvements can be verified. Some monitoring in the Upper French Broad River Watershed was funded under an agreement with the Tennessee Department of Agriculture, Nonpoint Source Program (U.S. Environmental Protection Agency Assistance Agreement C99944674-04-0 and C99944674-05-0).
- **Educational Projects.** The intent of educational projects funded through TDA-NPS is to raise the awareness of landowners and other citizens about practical actions that can be taken to eliminate nonpoint sources of pollution to the waters of Tennessee.

The Tennessee Department of Agriculture Agricultural Resources Conservation Fund Program (TDA-ARCF) provides cost-share assistance to landowners across Tennessee to install BMPs that eliminate agricultural nonpoint source pollution. This assistance is provided through Soil Conservation Districts, Resource Conservation and Development Districts, Watershed Districts, universities, and other groups. Additionally, a portion of

the TDA-ARCF is used to implement information and education projects statewide, with the focus on landowners, producers, and managers of Tennessee farms and forests.

Participating contractors in the program are encouraged to develop a watershed emphasis for their individual areas of responsibility, focusing on waters listed on the Tennessee 303(d) List as being impaired by agriculture. Current guidelines for the TDA-ARCF are available. Landowners can receive up to 75% of the cost of the BMP as a reimbursement.

Since January of 1999, the Department of Agriculture and the Department of Environment and Conservation have had a Memorandum of Agreement whereby complaints received by TDEC concerning agriculture or silviculture projects would be forwarded to TDA for investigation and possible correction. Should TDA be unable to obtain correction, they would assist TDEC in the enforcement against the violator. More information forestry BMPs is available at:

<http://www.state.tn.us/agriculture/forestry/bmpmanual.html>

The complaint form is available at:

http://www.state.tn.us/environment/wpc/forms/wqlogging_cn1274.doc

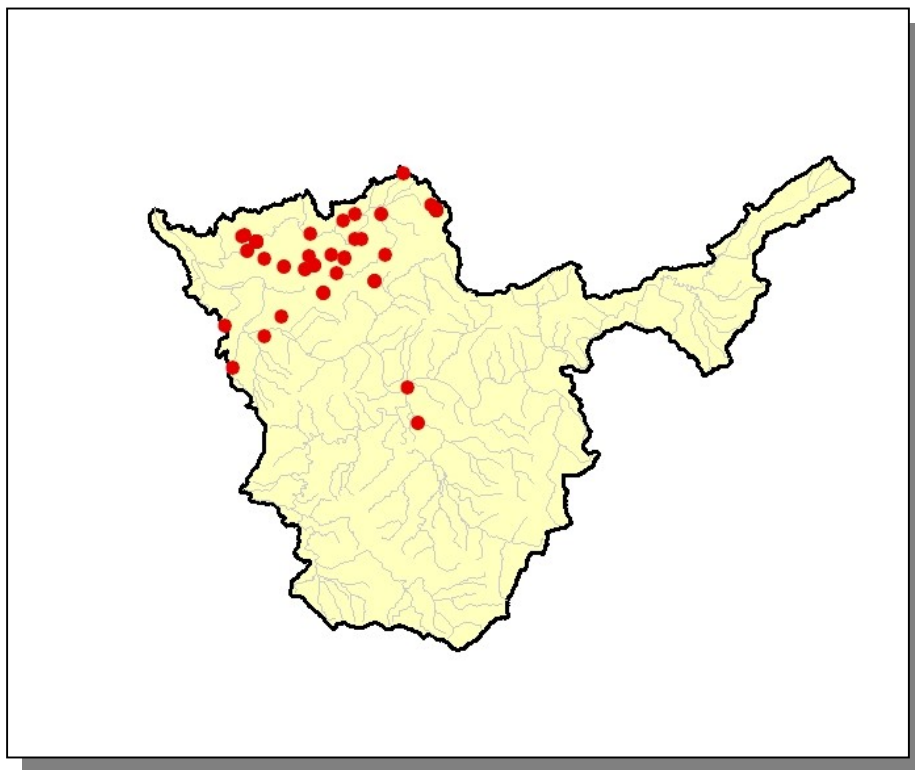


Figure 5-4. Location of BMPs installed from 2002 through 2006 in the Upper French Broad River Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs. More information is provided in Appendix V.

5.3.D. Tennessee Wildlife Resources Agency. The Tennessee Wildlife Resources Agency (TWRA) conducts a variety of activities related to watershed conservation and management. Fish management activities include documentation of fish and aquatic life through stream sampling and stocking of both warm water and coldwater sportfish. Fish data are managed in the Geographic Information System (GIS) project called Tennessee Aquatic Database System (TADS). TWRA nongame and endangered species projects include restoration of special status fish, aquatic life, and riparian wildlife. The Agency conducts a variety of freshwater mussel management, conservation, and restoration projects including the propagation and reintroduction of species once common in Tennessee streams. TWRA has been involved in riparian conservation projects since 1991 in partnership with state and federal agencies and conservation groups.

The Tennessee Aquatic Database System (TADS)

The Tennessee Aquatic Database System (TADS) originated in the mid-1980's as a geographically referenced fisheries database maintained with ESRI's GIS Arc/Info software. It consists of mapping coverages of streams, rivers and reservoirs along with relatable fisheries data files. These database files include stream and river fish distributions, sample site data, and Index of Biotic Integrity (IBI) data. The fish inventory data file contains over 15,000 records of fish occurrences from over 3,600 sample sites across the state. Fish data is referenced by river reach and a point coverage generated by latitude and longitude. Physical and chemical data and habitat evaluations from most of the sample sites have been entered into a database.

TWRA Fisheries stream survey data were consolidated, updated and entered into a Microsoft Access database to create the Tennessee Aquatic Database System 07 (TADS07), an updated version of the TADS. TADS07 contains fisheries stream survey data from 1987 to 2005.

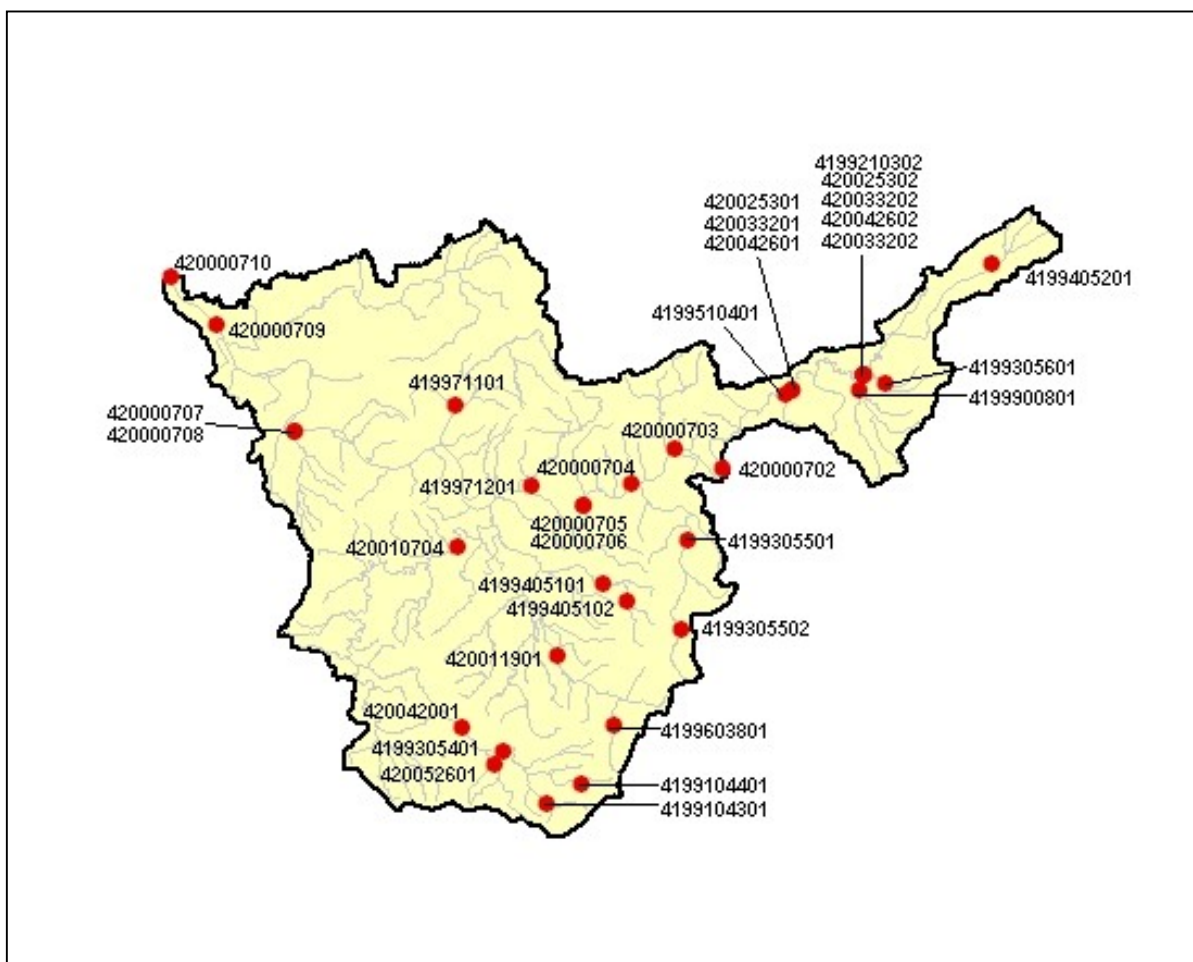


Figure 5-9. Location of TWRA TADS Sampling Sites in the Upper French Broad River Watershed from 1987-2005. More information is provided in Appendix V.

Tennessee State Wildlife Action Plan (SWAP)

The Tennessee State Wildlife Action Plan (SWAP), formerly known as the Comprehensive Wildlife Conservation Strategy (CWCS), was developed by the Tennessee Wildlife Resources Agency with assistance from The Nature Conservancy in 2005. Congress mandated that each state and territory in the United States develop a SWAP as a requirement for continued receipt of federal State Wildlife Grant funding. These plans require the completion of 8 key elements of wildlife planning: 1) a list of animal species of greatest conservation need, 2) information about the distribution and abundance of species targets, 3) locations and relative conditions of key habitats, 4) descriptions of problems affecting target species and their habitats, 5) descriptions of conservation actions and priorities for conserving target species and habitats, 6) details for monitoring target species, conservation actions, and adaptive management, 7) discussion of plans to review the SWAP at specific intervals, and 8) information about coordination and implementation of the SWAP with major stakeholders. In Tennessee, the SWAP was integrated into a spatial model using Geographic Information Systems (GIS) and other database technology. Priority aquatic, terrestrial, and subterranean

areas for conservation were identified across the state. Priorities were determined in the GIS model based upon relative differences in species rarity, population viability, and potential mobility of species across habitat units.

Priority problems affecting species and needed conservation actions are detailed across each region of the state. For complete information about the Tennessee SWAP, please visit: <http://www.state.tn.us/twra/cwcs/cwcsindex.html> to read or download the full report.

For information on these and other water resources related activities, please contact your Regional TWRA office at the following phone numbers:

West Tennessee (Region I)	1-800-372-3928
Middle Tennessee (Region II)	1-800-624-7406
Cumberland Plateau (Region III)	1-800-262-6704
East Tennessee (Region IV)	1-800-332-0900

TDD services are available at 615-781-6691.

TWRA's website is <http://www.state.tn.us/twra>.

5.3.E. North Carolina Division of Water Quality

Basinwide Planning in North Carolina

The North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Quality's (DWQ) Planning Section prepare the basinwide water quality plans for each of the seventeen major river basins across the state. Basinwide planning is a watershed-based approach to restoring and protecting North Carolina's surface waters. Preparation of a basinwide plan is a five-year process and includes:

- Phase I: Data collection and identification of goals
- Phase II: Data analysis and coordination of stakeholders to identify and prioritize water quality issues in that river basin
- Phase III: Preparation of the basinwide water quality plan (includes public review and comments), issuance of NPDES permits, and implementation of recommendations

While these plans are prepared by DWQ, their implementation and the protection of water quality entail the coordinated efforts of many agencies, local governments, and stakeholder groups across the state. The first cycle of plans was completed in 1998.

The goals of basinwide planning are to:

- ☐ Identify water quality problems and restore full use to impaired waters.
- ☐ Identify and protect high value resource waters.
- ☐ Protect unimpaired waters while allowing reasonable economic growth.

DWQ accomplishes these goals through the following objectives:

- ☐ Collaborate with other agencies to develop appropriate management strategies.
- ☐ Assure equitable distribution of waste assimilative capacity.
- ☐ Evaluate cumulative effects of pollution.
- ☐ Improve public awareness and involvement.
- ☐ Regulate point and nonpoint sources of pollution where other approaches are unsuccessful.

French Broad River Basin in North Carolina

The basin is composed of three major drainage areas: the **French Broad River (HUC 06010105)**, the Pigeon River (HUC 06010106), and the Nolichucky River (HUC 06010108). All three rivers individually flow northwest into Tennessee.

Specific watershed information can be found in the French Broad River Basinwide Water Quality Plan (April 2005). The plan is available on the DWQ Web site (www.ncwaterquality.org/basinwide/index.htm).

Water Quality Stressors and Sources in the French Broad River Basin

Many of the stressors related to water quality impairment in the basin include habitat degradation, fecal coliform bacteria, and altered watershed hydrology (i.e., impervious surfaces, stormwater runoff). Water quality stressors are identified when impacts have been noted to biological (fish and benthic) communities or water quality standards have been violated. In many cases, identifying stressors is challenging because direct measurements of the stressor may be difficult or prohibitively expensive. DWQ staff use field observations from sample sites, special studies, and data from ambient monitoring stations to identify stressors. It is important to identify stressors and potential sources of stressors so that water quality programs can target limited resources to address these issues.

Sources of stressors are most often associated with land use in a watershed, as well as the quality and quantity of any treated wastewater that may be entering a stream. Sources of stressors most often come from a watershed where the hydrology is altered enough to allow the stressor to be easily delivered to a stream during a rain event along with unnaturally large amounts of water. DWQ identifies the source of a stressor as specifically as possible depending on the amount of information available in a watershed. Most often, the source is based on the predominant land use in a watershed. Stressors sources identified in the French Broad River basin during this assessment period include urban or impervious surface areas, construction sites, road building, agriculture, and forestry. Point source discharges are also considered a water quality stressor source. More information about water quality stressors and sources can be found in the French Broad River Basinwide Water Quality Plan. The plan is available on the DWQ Web site (www.ncwaterquality.org/basinwide/index.htm).

Contact Information:

Michelle Raquet
Environmental Specialist
NCDENR DWQ
Planning Section – Basinwide Planning Unit
1617 Mail Service Center
Raleigh, NC 27699
Phone: 919-733-5083 ext. 367
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5.3.F. North Carolina Clean Water Management Trust Fund. The 1996 General Assembly of North Carolina established the Clean Water Management Trust Fund to help local governments, state agencies and conservation non-profit groups finance projects to protect and restore surface water quality. Since 1996, thanks to appropriations from the General Assembly, the CWMTF has awarded 943 grants for a total of \$711.5 million. CWMTF grants have contributed towards the protection of more than 391,805 acres and 4,277 miles of riparian buffers.

The 21-member, independent CWMTF Board of Trustees has full responsibility over the allocation of moneys from the Fund. CWMTF will fund projects that (1) enhance or restore degraded waters, (2) protect unpolluted waters, and/or (3) contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

For more information, contact Lisa Schell at (919) 716-0057 or visit:

<http://www.cwmtf.net/>.

5.4. LOCAL INITIATIVES.

5.4.A. The Smoky Mountain Resource Conservation and Development Council.

COUNCIL OVERVIEW

The Smoky Mountain Resource Conservation and Development (RC&D) Area encompasses both the Smoky Mountains of East Tennessee, as well as parts of the French Broad, Nolichucky, Little Tennessee, and Upper French Broad River basins. The counties included in this RC&D area are as follows: Blount, Cocke, Hamblen, Jefferson, Knox, and Sevier. The area includes approximately 1,629,440 acres – including parts of the Great Smoky Mountains National Park and the Cherokee National Forest. The area is bordered by the mountains of North Carolina along the southeast, by Greene County (TN) on the northeast, by the Upper French Broad River to the north, and by Anderson, Roane, and Loudon counties to the west. The area has a very diverse land use and geology. This is a rugged, rural landscape that is dominated by the Appalachian Mountains. The severely dissected ridges and narrow valleys that formed the western frontier of early America continue to influence transportation, commerce, agriculture, and land use.

The population of the six county region is approximately 712,171 according to an estimated figure obtained by the US Census Bureau in 2002. Farming enterprises include beef cattle, tobacco, dairy, poultry, and specialty crops. The vast majority of farmers are part-time within this region. Most jobs are in a variety of service trades (16.7%) and manufacturing facilities (21.3%). The average per capita income for the area in 1999 was \$17,970, with the median household income calculated to be \$33,460 per year. Unemployment across the area was calculated at a rate of 5.7%.

The Smoky Mountain RC&D Area received its charter in June 1997, as well as successfully obtained its 501(c)3 tax status with the Internal Revenue Service. At this point, the Council consisted of only five counties (Blount, Cocke, Hamblen, Jefferson, and Sevier). The Council's borders were expanded to include Knox County in late 2004.

In addition, the Smoky Mountain RC&D Council has received grants from the USDA Forest Service, Tennessee Department of Agriculture, Tennessee Valley Authority, US Fish & Wildlife Service, Tennessee Arts Commission, and the USDA – Rural Development. The funds generated from these grantors have been (and will be) used to initiate and complete projects that will help to meet the goals and objectives of our council.

MISSION STATEMENT

The mission of the Smoky Mountain RC&D Council and its programs is to empower residents to improve their quality of life through economic and community development while sustaining the natural resources of the area.

COUNCIL GOALS

Goal A: Expand sustainable economic development while conserving the area's natural resources.

Goal B: Promote new and innovative entrepreneurial opportunities to individuals within the RC&D Area.

Goal C: Educate individuals within the area on the importance of clean drinking water, as well as on the value of teaching water quality – in general terms.

Goal D: Reach 25% of the RC&D Area population with educational programs by 2010, which will empower them with the knowledge and desire to improve their quality of life.

RECENT PROJECTS in the Upper French Broad River Watershed:

- In the process of installing a alternative water system, fencing, and heavy use area on Todd Bunch farm in order to increase water quality. This is located in the upper French Broad.

Contact:

Eston Williams

Smoky Mountain RC&D Council

1715 Garden Village Drive

White Pine, Tennessee 37890-3148

Phone: 865-674-8890

Email: eston.williams@tn.usda.gov

5.4.B. The Appalachian Resource Conservation and Development Council. The mission of the Appalachian RC&D Council is to conserve natural resources and improve rural economies through community leadership and enhanced educational opportunities.

The Appalachian RC&D Council assists in administering the USDA Resource Conservation and Development Program, which is a unique combination of private enterprise and federal assistance that encourages economic growth through development, conservation, and planned utilization of natural resources across the council area and Tennessee. Just a few services the RC&D Program is providing in our community are Conservation Education, Farmland Protection, providing Technical Assistance, ensuring Community Services, establishing Sustainable Development, encouraging Natural Resource Protection, and Communicating Local Issues.

The Appalachian RC&D Council is quite active with numerous watershed area groups in our six county region. Along with TVA, the Appalachian RC&D Council started the Upper and Middle Nolichucky and Upper Holston Watershed Alliances and have provided considerable support to them as well as to the Boone Watershed Partnership.

For more information on the Appalachian RC&D Council and its programs, contact Roy Settle, NRCS-RC&D Coordinator at 423-753-4441 ext. 4 or roy@appalachianrcd.org or visit the web site www.appalachianrcd.org.